

CLAIMS

What is claimed is:

5 1. An isolated, enriched or purified nucleic acid
encoding a FRS2 polypeptide.

10 2. The nucleic acid molecule of claim 1, where
the nucleic acid molecule is isolated, enriched, or
purified from a mammal.

15 3. The nucleic acid molecule of claim 1, where
the nucleic acid encodes at least three contiguous amino
acids of the full length amino acid sequence shown in
Figure 1A.

20 4. A nucleic acid probe for the detection of a
nucleic acid molecule encoding a FRS2 polypeptide in a
sample.

 5. A nucleic acid vector comprising a nucleic
acid molecule encoding a FRS2 polypeptide and a promoter
effective to initiate transcription in a host cell.

25 6. A recombinant cell or tissue comprising a
nucleic acid molecule encoding a FRS2 polypeptide.

 7. An isolated, enriched or purified FRS2

polypeptide.

8. The isolated, enriched, or purified FRS2 polypeptide, wherein said polypeptide is a unique
5 fragment comprising at least three contiguous amino acids present in the full length amino acid sequence shown in Figure 1A.

9. An antibody or antibody fragment having
10 specific binding affinity to a FRS2 polypeptide.

10. A hybridoma which produces an antibody having
specific binding affinity to a FRS2 polypeptide.

11. An isolated, enriched, or purified nucleic
15 acid molecule comprising a nucleotide sequence that;
(a) encodes a polypeptide having the full
length amino acid sequence set forth Figure 1A;
(b) the complement of the nucleic acid
20 sequence of (a);

(c) hybridizes under highly stringent
conditions to the nucleotide molecule of (a) and encodes
a naturally occurring FRS2 protein;

(d) a FRS2 polypeptide having the full
25 length amino acid sequence of sequence set forth in
Figure 1A except that it lacks one or more of the
following segments of amino acid residues: 1-10, 11-152,
or 153-508;

(e) the complement of the nucleic acid sequence of (d);

(f) a polypeptide having the amino acid sequence set forth in Figure 1A from amino acid residues 1-10, 11-152, 153-508;

(g) the complement of the nucleic acid sequence of (f);

(h) encodes a polypeptide having the full length amino acid sequence set forth in Figure 1A except that it lacks one or more of the domains selected from the group consisting of a myristylation region, a phosphotyrosine binding region, and a C-terminal region;

(i) the complement of the nucleic acid sequence of (h);

(j) encodes a polypeptide of (a), (d), or (f) containing one or both of the following mutations: tyrosine 349 to phenylalanine or tyrosine 392 to phenylalanine; or

(k) the complement of the nucleic acid sequence of (j).

12. A nucleic acid vector comprising a nucleic acid molecule of claim 11.

12. A recombinant cell or tissue comprising a nucleic acid molecule of claim 11.

14. A method of identifying compounds capable of

blocking or enhancing an interaction between FRS2 and a natural binding partner that are useful for diagnosing, preventing, or treating an abnormal condition in an organism, where the method comprises the following steps:

- (a) adding a compound to cells containing a FRS2 polypeptide; and
- (b) detecting a change in the interaction between FRS2 and a natural binding partner.

15. A method of diagnosing an abnormal condition associated with cell proliferation or cell differentiation in an organism, where the abnormal condition is caused by an aberration in a signal transduction pathway characterized by an interaction between a FRS2 polypeptide and a natural binding partner, comprising the step of detecting the abnormal interaction.

16. The method of claim 15, where the organism is a mammal.

17. A fusion peptide comprising a FRS2 polypeptide of claim 7 attached to a second polypeptide.

18. The fusion peptide of claim 17 wherein said second peptide is GT, HA, multus-binding protein, or a fragment of any one of said second polypeptides.

19. A nucleic acid molecule encoding the fusion protein of claim 18.